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Michigan Wind Energy System Siting Guidelines Draft #5

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These guidelines have been developed by the Energy Office, Michigan Dept. of Labor and Economic Growth with input from members of the Michigan Wind Working Group. Comments or questions are welcome and should be directed to John Sarver, Energy Office at 517-241-6280 or jhsarve@michigan.gov.

- A. Purpose: These guidelines have been developed to balance the need for clean, renewable energy resources and the necessity to protect the public health, safety, and welfare. Electricity generation is responsible for 36% of carbon dioxide pollution, 64% of sulfur dioxide pollution, 26% of nitrogen oxide pollution, and 34% of mercury pollution in the U.S. Electricity generation from clean, renewable energy resources will reduce air pollution, increase the diversity of our electric system, and provide a hedge against increases in the price of fossil fuels used for electric generation. These guidelines are not intended to apply in urban areas. Existing zoning and ordinance requirements in urban areas including height, noise, and setback requirements are adequate to protect public health, safety, and welfare.
- B. Small Wind Energy Systems: A small wind energy system is defined as "A wind energy conversion system which has a rated capacity of not more than 300 kW and which is intended to primarily reduce on-site consumption of utility power." Small wind energy systems shall be a *Permitted Use* in all zoning classifications where structures of any sort are allowed subject to the following requirements.
1. Property Set-back: The distance between a small wind energy system and the property lines of the owner's property shall be at least the height of the small wind energy system tower including the top of the blade in its vertical position. Exceptions for neighboring property are allowed with the consent of those property owners.
 2. Lowest Point of Blade: The minimum vertical blade tip clearance from grade shall be at least 20 feet for a small wind energy system employing a horizontal axis rotor.
 3. Sound Pressure Level: Small wind energy systems shall not exceed 60 dBA at the closest property line. This level, however, may be exceeded during short-term events such as utility outages and/or severe wind storms.
 4. Code Compliance: Small wind energy systems including towers shall comply with all applicable state construction and electrical codes.

5. FAA Regulations: Small wind energy systems including towers shall comply with Federal Aviation Administration requirements, the Michigan Airport Zoning Public Act No. 23 of 1950, and local jurisdiction airport overlay zone regulations.
6. Utility Notification and Interconnection: No small wind energy system shall be installed until evidence has been given to the local government that the utility company has been informed of the customer's intent to install an interconnected customer-owned generator. An interconnected customer-owned generator shall comply with Michigan Public Service Commission and utility requirements. Off-grid systems shall be exempt from this requirement.
7. Maintenance Plan. The owner of the small wind energy system shall obtain a maintenance plan and implement a regular maintenance program.

C. Wind Site Assessment: Prior to construction of a large wind energy system, a wind site assessment is conducted to determine the wind speeds and the feasibility of using the site. Installation of anemometer ("Met") towers shall be considered a *Special Land Use*. Prior to the installation of the tower, an application for a *Special Land Use* shall be filed with the local government that will include a 1) site plan, 2) applicant identification information, 3) a copy of that portion of the applicant's lease with the land owner granting authority to install the Met tower and requiring the applicant to remove all equipment and restore the site after completion of the wind site assessment, and 4) proof of the applicant's public liability insurance. The distance between a Met tower and the property lines between the leased property and the non-leased property shall be at least the height of the Met tower. Leased property can include more than one piece of property and the requirement shall apply to the combined properties. Exceptions for neighboring property are also allowed with the consent of those property owners.

D. Large Wind Energy Systems: A large wind energy system is defined as "A wind energy conversion system which has a rated capacity of more than 300 kW." Large wind energy systems shall be considered a *Special Land Use*. Prior to the installation of a large wind energy system, an application for a *Special Land Use* shall be filed with the local government that will include a site plan, applicant identification information, and proof of the applicant's public liability insurance, and will cover the following items.

1. Property Set-back: The distance between a large wind energy system and the property lines between the leased property and the non-leased property shall be at least the height of the wind turbine tower including the top of the blade in its vertical position. Leased property can include more than one piece of property and the requirement shall apply to the combined properties. Exceptions for neighboring property are also allowed with the consent of those

property owners. SCADA (supervisory control and data acquisition) towers shall also comply with the property set-back requirement. The set-back shall be at least the height of the SCADA tower. An Operations and Maintenance Office building, a sub-station, or ancillary equipment shall comply with any property set-back requirement applicable to that type of building or equipment.

2. Lowest Point of Blade: The minimum vertical blade tip clearance from grade shall be at least 20 feet for a large wind energy system employing a horizontal axis rotor.
3. Sound Pressure Level: The statistical sound pressure level generated by a large wind energy system shall not exceed $L_{10} - 55$ dBA measured at the property lines of the leased property. Leased property can include more than one piece of property and the requirement shall apply to the combined properties. The statistical sound pressure level means the level which is equaled or exceeded a stated percentage of time. An $L_{10} - 55$ dBA indicates that in any hour of the day 55 dBA can be equaled or exceeded only 10% of the time, or for 6 minutes. If the ambient sound pressure level exceeds 55 dBA, the standard shall be ambient dBA plus 5 dBA. The measurement of the sound pressure level can be done according to the International Standard for Acoustic Noise Measurement Techniques for Wind Generators (IEC 61400-11), the State of Oregon Sound Measurement Procedures Manual (NPCS-1), or other accepted procedures. Exceptions to this requirement are allowed with the consent of property owners. If an exception is granted, the requirements shall apply at the next closest property line. Independent certification before and after construction shall be provided that the large wind energy system meets this requirement.
4. Construction and Electrical Codes and Interconnection Standards: Large wind energy systems including towers shall comply with all applicable state construction and electrical codes. Large wind energy systems shall comply with applicable utility, Michigan Public Service Commission, and Federal Energy Regulatory Commission interconnection standards.
5. FAA Regulations: Large wind energy systems including towers shall comply with Federal Aviation Administration requirements, the Michigan Airport Zoning Public Act No. 23 of 1950, and local jurisdiction airport overlay zone regulations. The minimum FAA lighting standards shall not be exceeded. Lights should be of the lowest intensity required and strobe lighting or other intermittent white lighting fixtures should be avoided. All tower lighting required by the FAA shall be shielded to the extent possible to reduce glare and visibility from the ground.
6. Falling Ice: Signage shall be used to warn visitors about the potential danger of falling ice. All large wind energy systems

within 330 feet of a public road shall be shut down for the duration of any freezing ice storm.

7. Visual Impact: The applicant shall use measures to reduce the visual impact of wind turbines to the extent possible. Large wind energy system projects shall use tubular towers and all large wind energy systems in a project shall be finished in a single, non-reflective matte finished color or a camouflage scheme. Individual large wind energy systems within a project shall be constructed using wind turbines whose appearance, with respect to one another, is similar within and throughout the project, thus exhibiting reasonable uniformity in overall turbine size, geometry, and rotational speeds. No lettering, company insignia, advertising, or graphics shall be on any part of the tower, hub, or blades. Nacelles may have lettering that exhibits the manufacturer's and/or owner's identification.
8. Environmental Impact: The applicant shall conduct a study to identify and assess any potential impacts on the natural environment including, but not limited to, wildlife, endangered species, wetlands, historical and cultural sites, antiquities, and fragile ecosystems and shall take appropriate measures to eliminate or mitigate impacts identified in the study.
9. Electromagnetic Interference: No large wind energy system shall be installed in any location where its proximity with existing fixed broadcast, retransmission, or reception antenna for radio, television, or wireless phone or other personal communication systems would produce electromagnetic interference with signal transmission or reception. No large wind energy system shall be installed in any location along the major axis of an existing microwave communications link where its operation is likely to produce electromagnetic interference in the link's operation.
10. Shadow Flicker: The applicant shall conduct a study on potential shadow flicker. The study shall identify the locations of shadow flicker that may be caused by the project and the expected durations of the flicker at these locations. The study shall identify problem areas where shadow flicker may interfere with residences and roadways and describe measures that shall be taken to eliminate or mitigate the problems.
11. Safety Issues: All large wind energy systems shall be designed to prevent external access to electrical and mechanical components and shall have access doors that are kept securely locked at all times. The application for a *Special Land Use* shall include Manufacturers' Material Safety Data Sheet documentation including the type and quantity of all materials used in the operation of all equipment including, but not limited to, all lubricants and coolants. A sign shall be posted near the tower or Operations and Maintenance Office building that will contain emergency contact information.

12. Decommissioning: The applicant shall submit a decommissioning plan. The plan shall include: 1) the anticipated life of the project, 2) the estimated decommissioning costs in current dollars, 3) the method of ensuring that funds will be available for decommissioning and restoration, and 4) the anticipated manner in which the project will be decommissioned and the site restored.
13. Complaint Resolution: The applicant shall develop a process to resolve complaints from nearby residents. The process shall use an independent mediator or arbitrator and include a time limit for acting on a complaint. The applicant shall make every reasonable effort to resolve any complaint.